



US009995769B2

(12) **United States Patent**
Joyce et al.

(10) **Patent No.:** **US 9,995,769 B2**
(45) **Date of Patent:** **Jun. 12, 2018**

(54) **UNIVERSAL WATTHOUR METER
SOCKET/ADAPTER FOR FIELD TESTING**

(71) Applicant: **RADIAN RESEARCH, INC.,**
Lafayette, IN (US)

(72) Inventors: **Joseph P. Joyce**, Lafayette, IN (US);
Robert L. Kindschi, Lafayette, IN
(US)

(73) Assignee: **RADIAN RESEARCH, INC.,**
Lafayette, IN (US)

(*) Notice: Subject to any disclaimer, the term of this
patent is extended or adjusted under 35
U.S.C. 154(b) by 779 days.

(21) Appl. No.: **14/387,065**

(22) PCT Filed: **Mar. 15, 2013**

(86) PCT No.: **PCT/US2013/032267**

§ 371 (c)(1),

(2) Date: **Sep. 22, 2014**

(87) PCT Pub. No.: **WO2013/148336**

PCT Pub. Date: **Oct. 3, 2013**

(65) **Prior Publication Data**

US 2015/0048857 A1 Feb. 19, 2015

Related U.S. Application Data

(60) Provisional application No. 61/616,781, filed on Mar.
28, 2012.

(51) **Int. Cl.**

G01R 1/04 (2006.01)

G01R 11/04 (2006.01)

(Continued)

(52) **U.S. Cl.**

CPC **G01R 1/0466** (2013.01); **G01R 1/06788**
(2013.01); **G01R 11/04** (2013.01); **G01R 31/00**
(2013.01); **G01R 35/04** (2013.01)

(58) **Field of Classification Search**

CPC .. **G01R 21/133**; **G01R 21/127**; **G01R 21/008**;
G01R 21/06; **G01R 11/25**

(Continued)

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,248,935 A * 9/1993 Sakoyama G06G 7/02
324/103 R

6,015,314 A 1/2000 Benfante
(Continued)

OTHER PUBLICATIONS

PCT Search Report and Written Opinion for PCT/US2013/032267,
completed Jun. 6, 2013.

Primary Examiner — Melissa Koval

Assistant Examiner — Trung Nguyen

(74) *Attorney, Agent, or Firm* — Barnes & Thornburg
LLP

(57) **ABSTRACT**

A portable device for field testing watthour meters including a socket with one or more connectors configured to engage a watthour meter blade is disclosed. The connectors may include a pair of wire forms so oriented that the connector can connect to a watthour meter blade oriented in either of two orientations 90° apart from each other by resiliently deflecting portions of the wire forms. The connectors may include a jaw socket cup, a torsion clip in the jaw socket cup for contacting a watthour meter blade when the watthour meter blade is inserted into the jaw socket cup. The torsion clip includes a first surface and a pair of facing surfaces connected to, and extending away from, the first surface that define a channel sized to receive the watthour meter blade.

14 Claims, 13 Drawing Sheets

